US007331869B2

(12) **United States Patent**
Blanco

(10) **Patent No.: US 7,331,869 B2**
(45) **Date of Patent: Feb. 19, 2008**

(54) **METHOD AND APPARATUS FOR CREATING AND PLAYING SOUNDTRACKS IN A GAMING SYSTEM**

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(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/068,551**

(22) Filed: **Feb. 28, 2005**

(65) **Prior Publication Data**

US 2005/0159218 A1 Jul. 21, 2005

Related U.S. Application Data

(60) Continuation of application No. 10/778,643, filed on Feb. 12, 2004, now Pat. No. 6,878,067, which is a division of application No. 09/802,661, filed on Mar. 9, 2001, now abandoned.

(51) **Int. Cl.**
A63F 13/12 (2006.01)

(52) **U.S. Cl.** **463/35**; 463/40; 463/41; 463/42

(58) **Field of Classification Search** ..... 463/35, 463/25, 29, 36–39, 40–42, 43; 369/63, 30.01; 446/397; 705/14; 707/102, 104.1; 700/86, 700/94; 434/307 A
See application file for complete search history.

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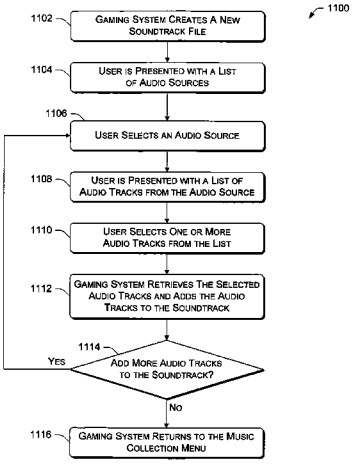
Primary Examiner—Robert E. Pezzuto
Assistant Examiner—Matthew D. Hoel

(57) **ABSTRACT**

A gaming system includes a game console that executes an application that creates and plays soundtracks through the gaming system. The application allows a user to create soundtracks by copying audio tracks from one or more audio sources. A user-created soundtrack can be associated with a particular game such that the user-created soundtrack is played during execution of the game instead of the game's default soundtrack. During execution of a game, a user may change the soundtrack being played.

18 Claims, 12 Drawing Sheets


1100
1102
Gaming System Creates A New Soundtrack File
1104
User is Presented with a List of Audio Sources
1106
User Selects an Audio Source
1108
User is Presented with a List of Audio Tracks from the Audio Source
1110
User Selects One or More Audio Tracks from the List
1112
Gaming System Retrieves The Selected Audio Tracks and Adds the Audio Tracks to the Soundtrack
1114
Add More Audio Tracks to the Soundtrack?
Yes
No
1116
Gaming System Returns to the Music Collection Menu

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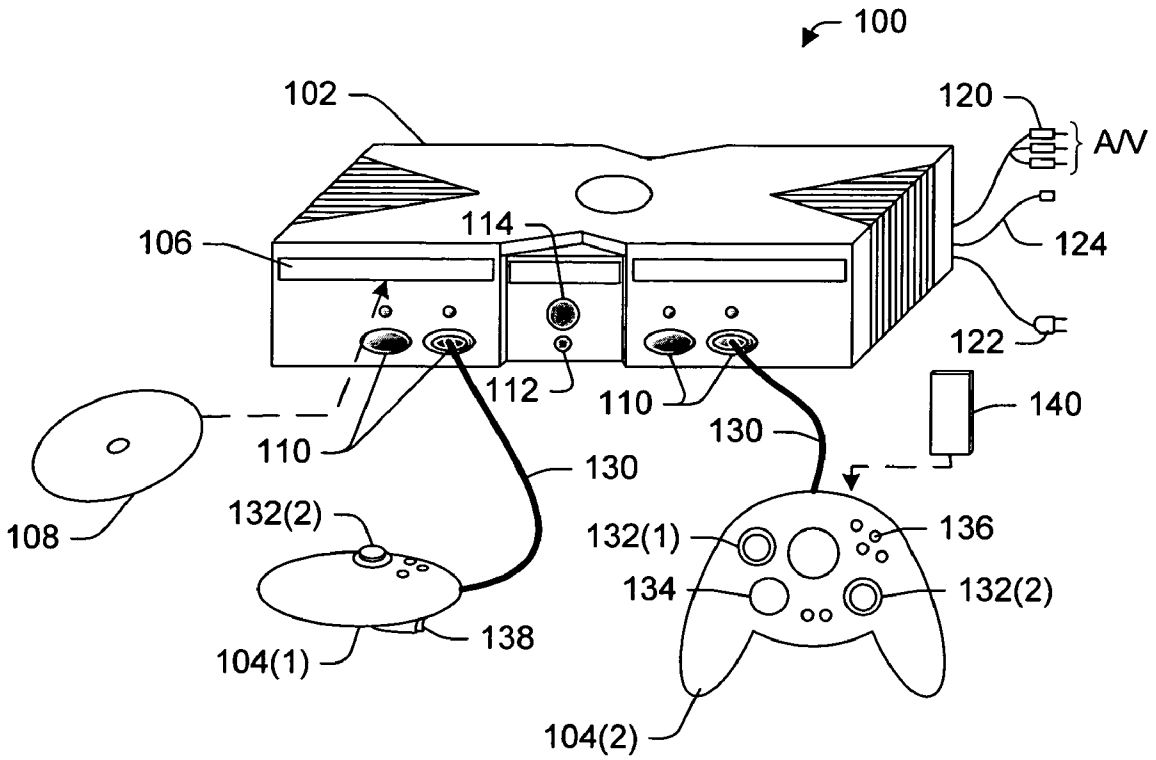

100
102
120
A/V
106
114
124
122
112
110
140
110
130
130
108
132(2)
132(1)
136
134
132(2)
138
104(1)
104(2)

Fig. 1

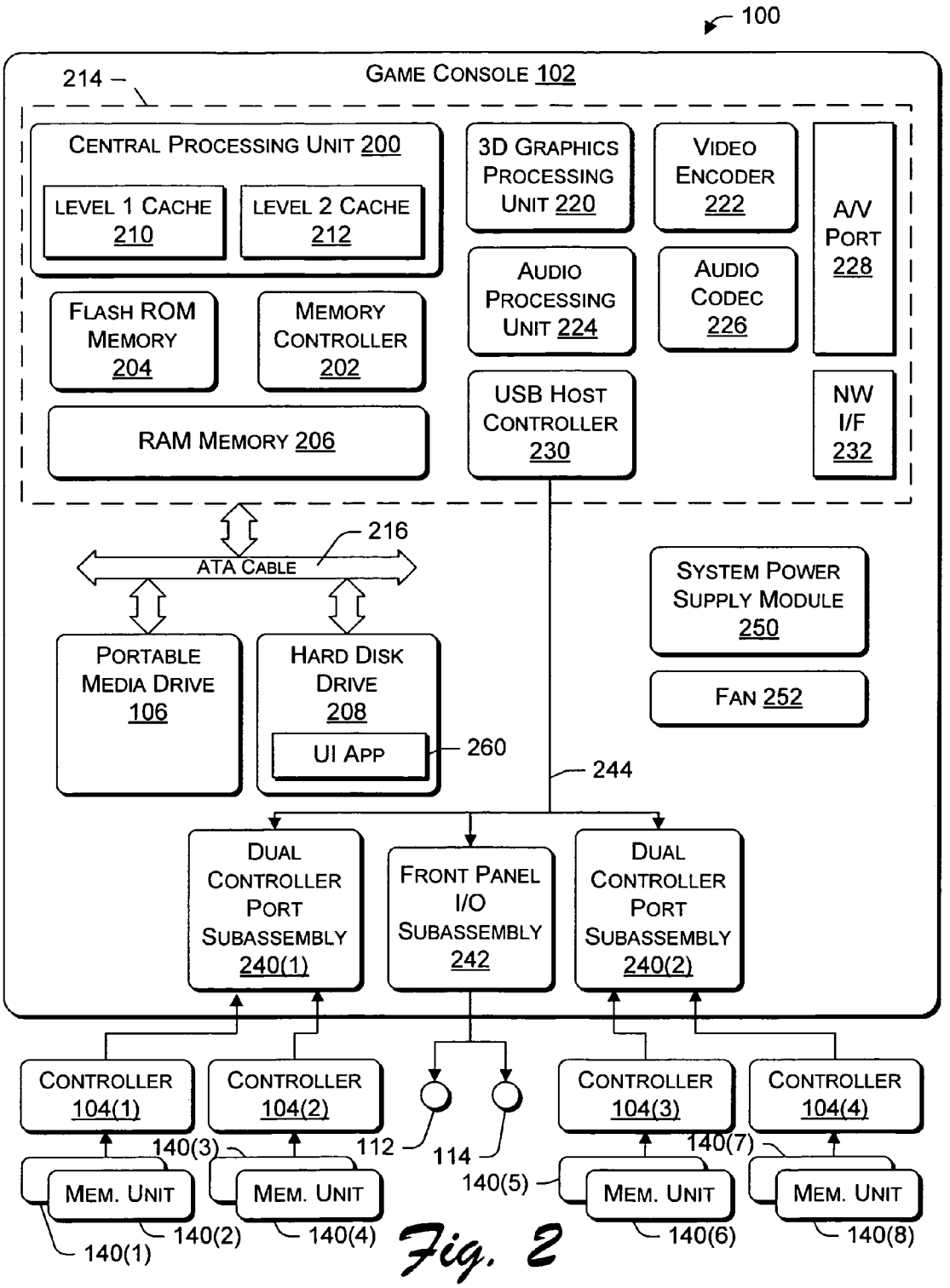
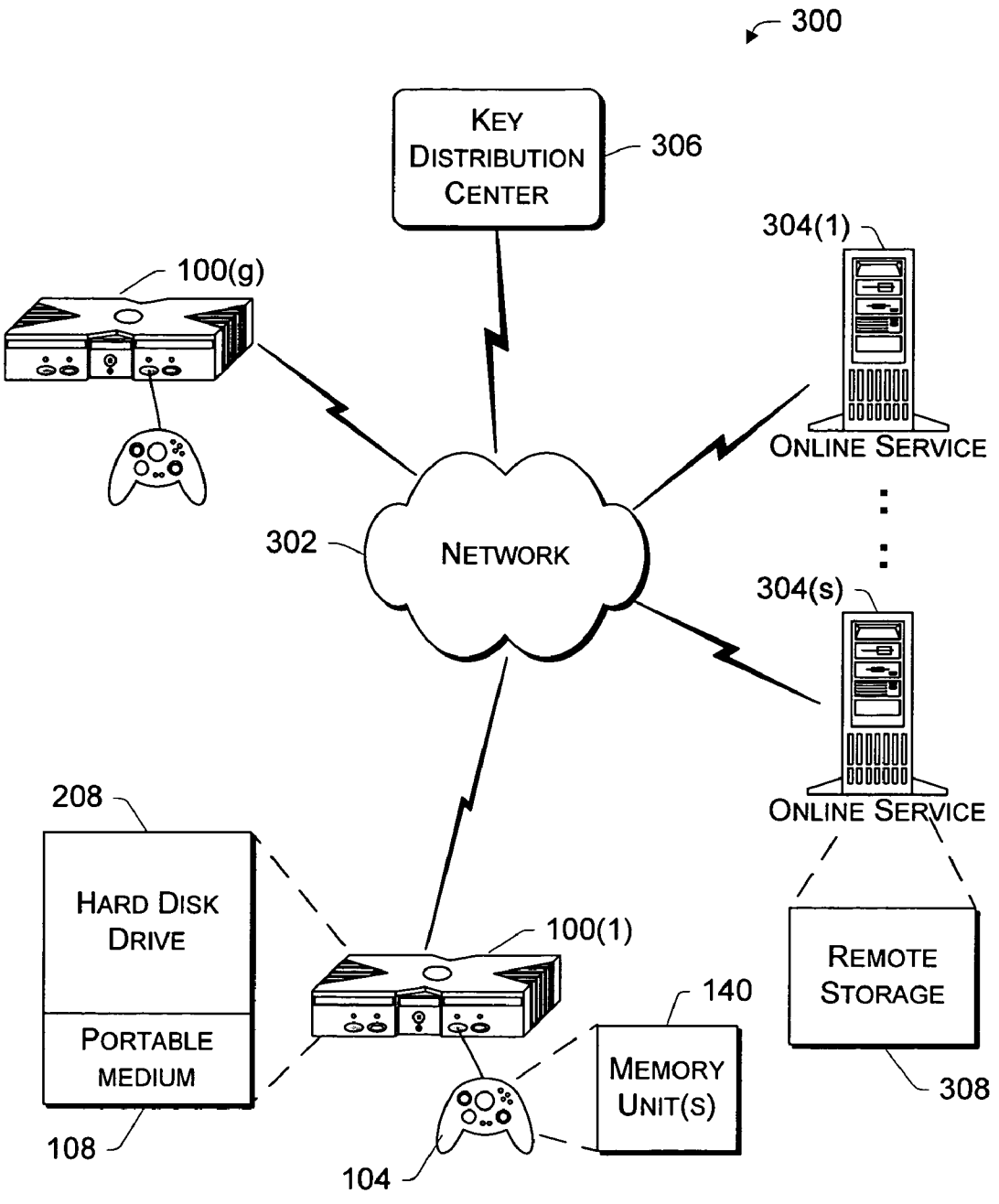

100
214
GAME CONSOLE 102
CENTRAL PROCESSING UNIT 200
LEVEL 1 CACHE 210
LEVEL 2 CACHE 212
3D GRAPHICS PROCESSING UNIT 220
VIDEO ENCODER 222
A/V PORT 228
AUDIO PROCESSING UNIT 224
AUDIO CODEC 226
FLASH ROM MEMORY 204
MEMORY CONTROLLER 202
USB HOST CONTROLLER 230
NW I/F 232
RAM MEMORY 206
216
ATA CABLE
SYSTEM POWER SUPPLY MODULE 250
FAN 252
PORTABLE MEDIA DRIVE 106
HARD DISK DRIVE 208
UI APP
260
244
DUAL CONTROLLER PORT SUBASSEMBLY 240(1)
FRONT PANEL I/O SUBASSEMBLY 242
DUAL CONTROLLER PORT SUBASSEMBLY 240(2)
CONTROLLER 104(1)
CONTROLLER 104(2)
CONTROLLER 104(3)
CONTROLLER 104(4)
140(3)
112
114
140(7)
140(5)
MEM. UNIT
MEM. UNIT
MEM. UNIT
MEM. UNIT
140(1)
140(2)
140(4)
140(6)
140(8)

Fig. 2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KEY DISTRIBUTION CENTER
306
304(1)
100(g)
ONLINE SERVICE
302
NETWORK
304(s)
ONLINE SERVICE
208
HARD DISK DRIVE
PORTABLE MEDIUM
108
100(1)
140
MEMORY UNIT(S)
REMOTE STORAGE
308
104

Fig. 3

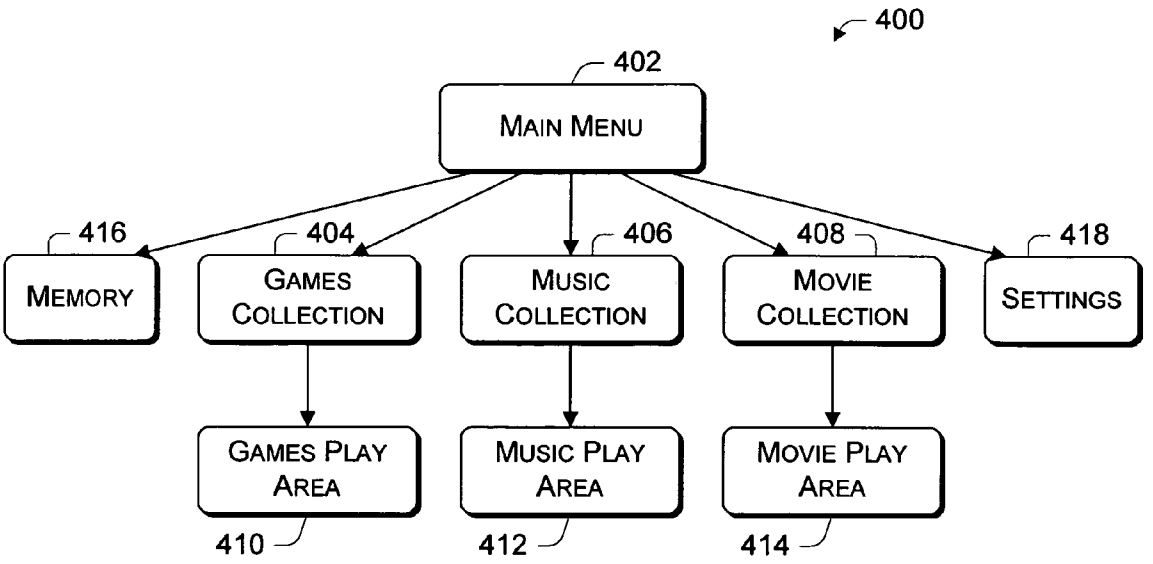
400
402
MAIN MENU
416
MEMORY
404
GAMES COLLECTION
406
MUSIC COLLECTION
408
MOVIE COLLECTION
418
SETTINGS
GAMES PLAY AREA
410
MUSIC PLAY AREA
412
MOVIE PLAY AREA
414

Fig. 4

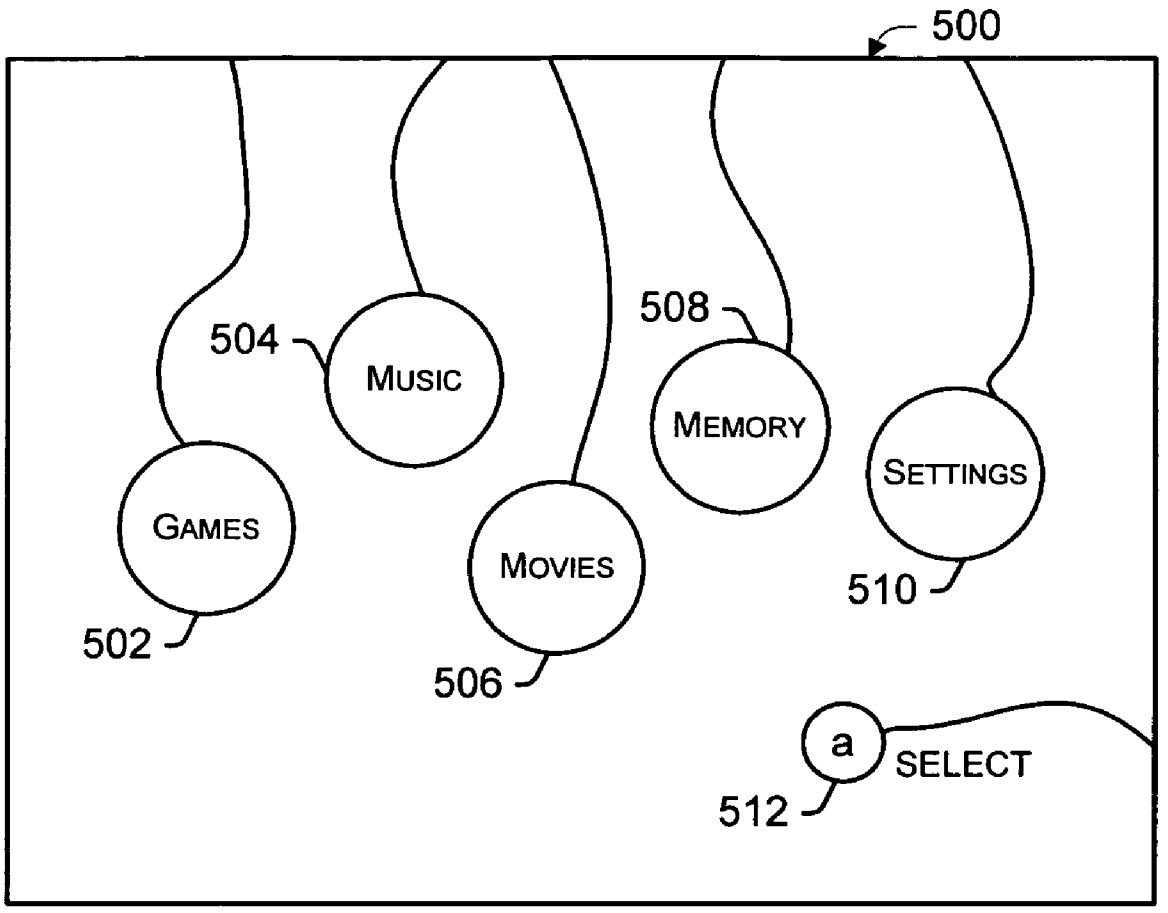
500
504
MUSIC
508
MEMORY
SETTINGS
GAMES
MOVIES
510
502
506
a
SELECT
512

Fig. 5

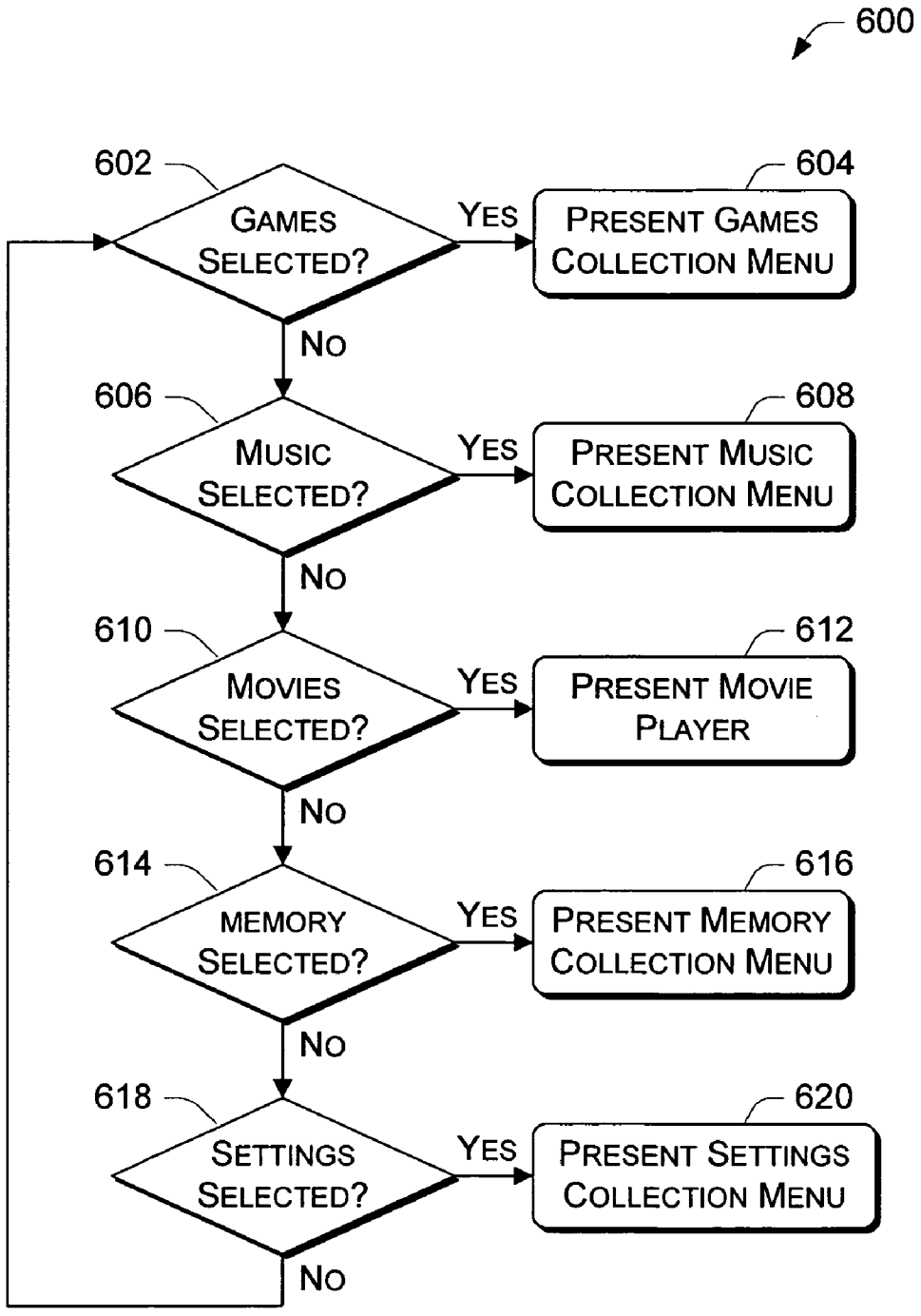
600
602
GAMES SELECTED?
YES
604
PRESENT GAMES COLLECTION MENU
NO
606
MUSIC SELECTED?
YES
608
PRESENT MUSIC COLLECTION MENU
NO
610
MOVIES SELECTED?
YES
612
PRESENT MOVIE PLAYER
NO
614
MEMORY SELECTED?
YES
616
PRESENT MEMORY COLLECTION MENU
NO
618
SETTINGS SELECTED?
YES
620
PRESENT SETTINGS COLLECTION MENU
NO

Fig. 6

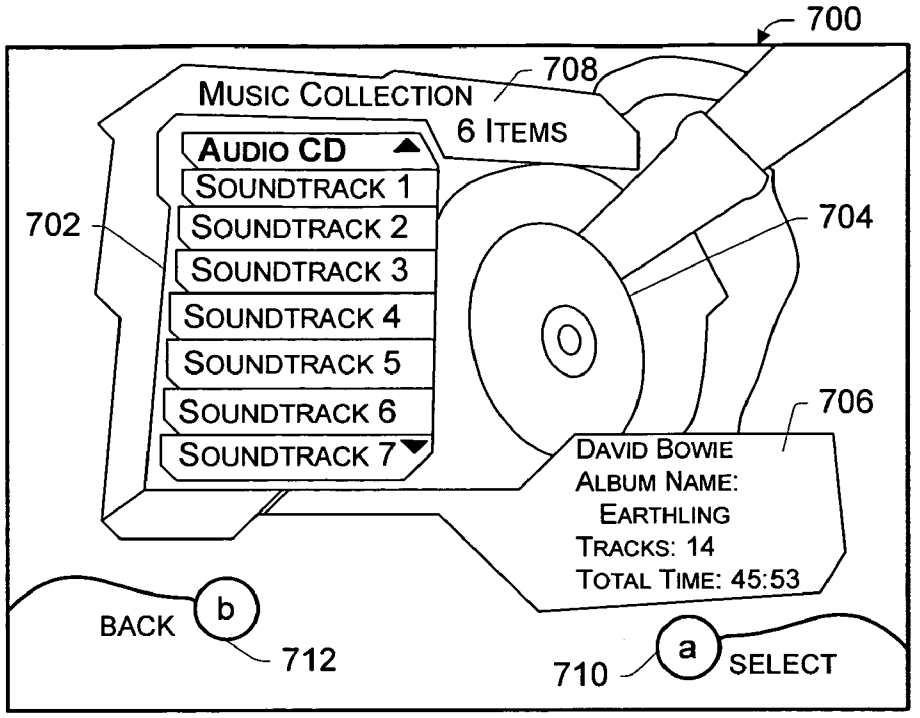
700
708
MUSIC COLLECTION
6 ITEMS
AUDIO CD
SOUNDTRACK 1
SOUNDTRACK 2
SOUNDTRACK 3
SOUNDTRACK 4
SOUNDTRACK 5
SOUNDTRACK 6
SOUNDTRACK 7
702
704
706
DAVID BOWIE
ALBUM NAME:
EARTHLING
TRACKS: 14
TOTAL TIME: 45:53
BACK
b
712
710
a
SELECT

Fig. 7

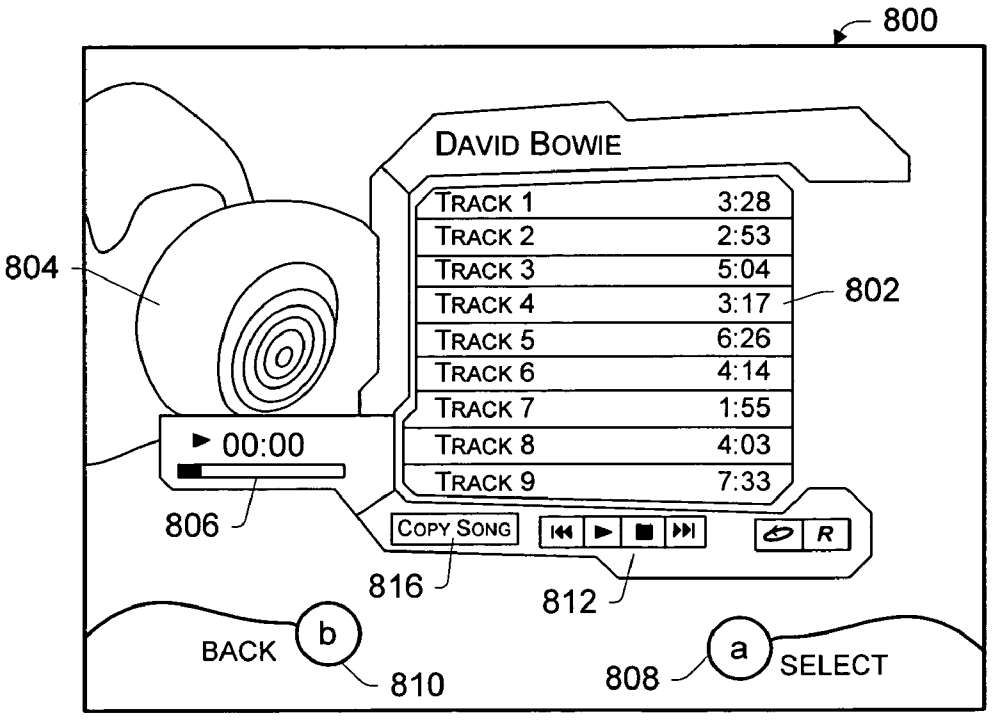
800
DAVID BOWIE
804
TRACK 1 3:28
TRACK 2 2:53
TRACK 3 5:04
TRACK 4 3:17
TRACK 5 6:26
TRACK 6 4:14
TRACK 7 1:55
TRACK 8 4:03
TRACK 9 7:33
802
00:00
806
COPY SONG
816
812
R
BACK
b
810
808
a
SELECT

Fig. 8

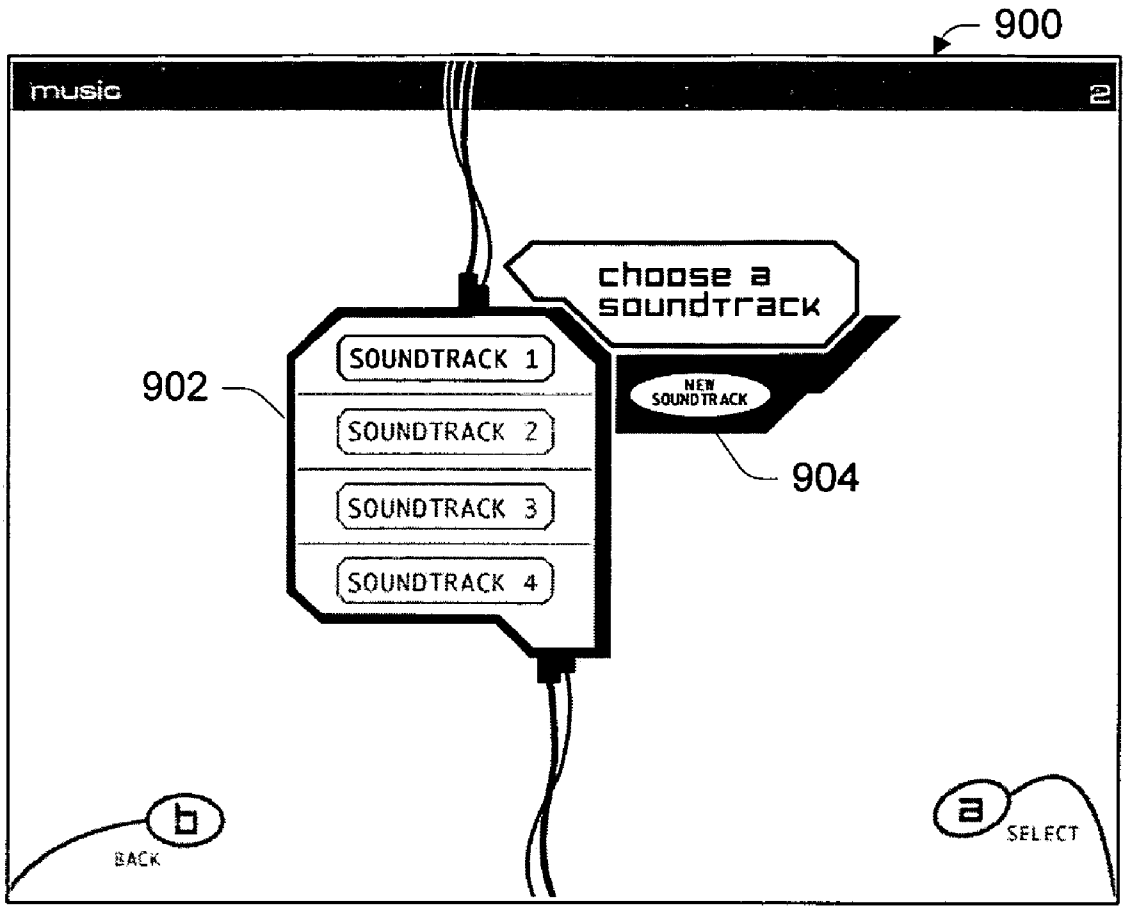
900
music
choose a soundtrack
902
SOUNDTRACK 1
SOUNDTRACK 2
SOUNDTRACK 3
SOUNDTRACK 4
NEW SOUNDTRACK
904
b
BACK
a
SELECT

Fig. 9

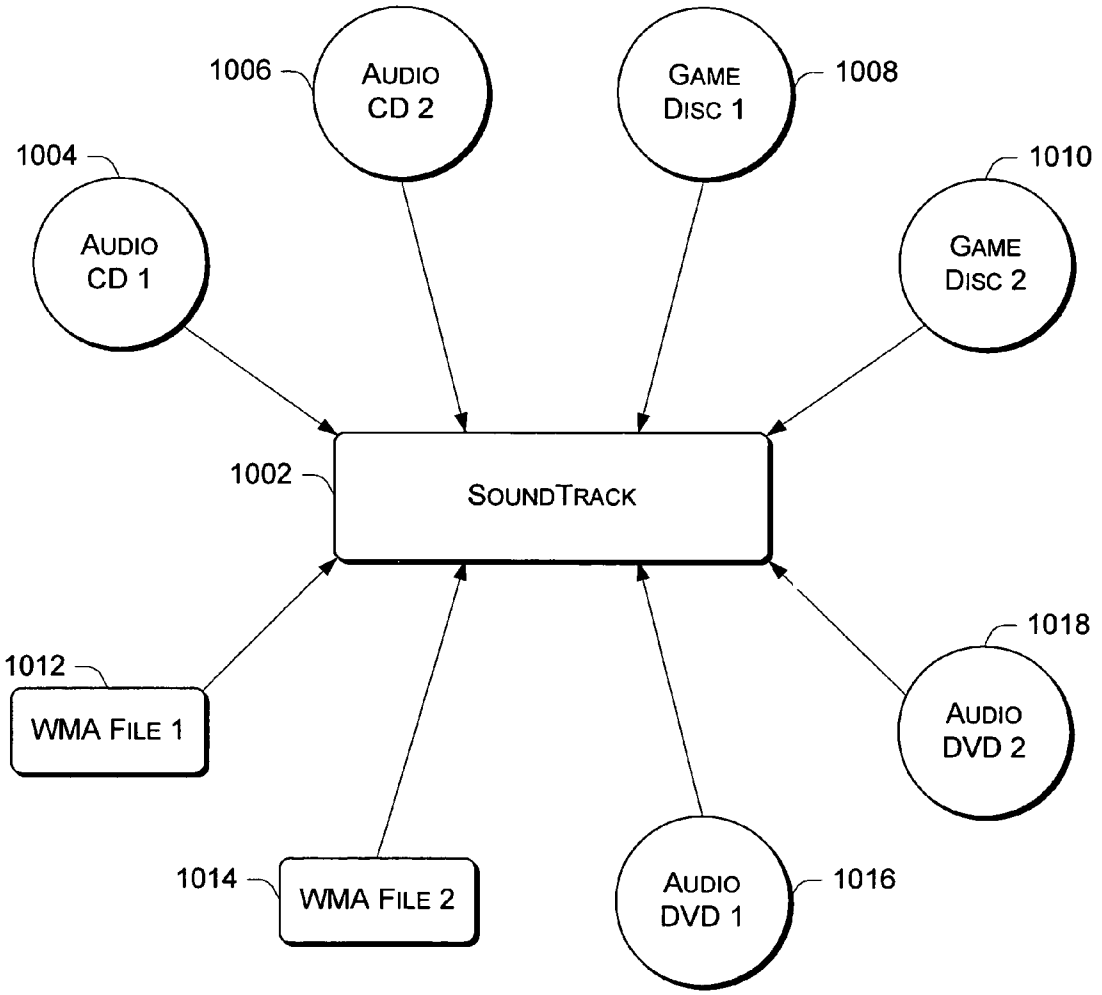
1006
AUDIO CD 2
GAME DISC 1
1008
1004
AUDIO CD 1
1010
GAME DISC 2
1002
SOUNDTRACK
1012
WMA FILE 1
1018
AUDIO DVD 2
1014
WMA FILE 2
AUDIO DVD 1
1016

Fig. 10

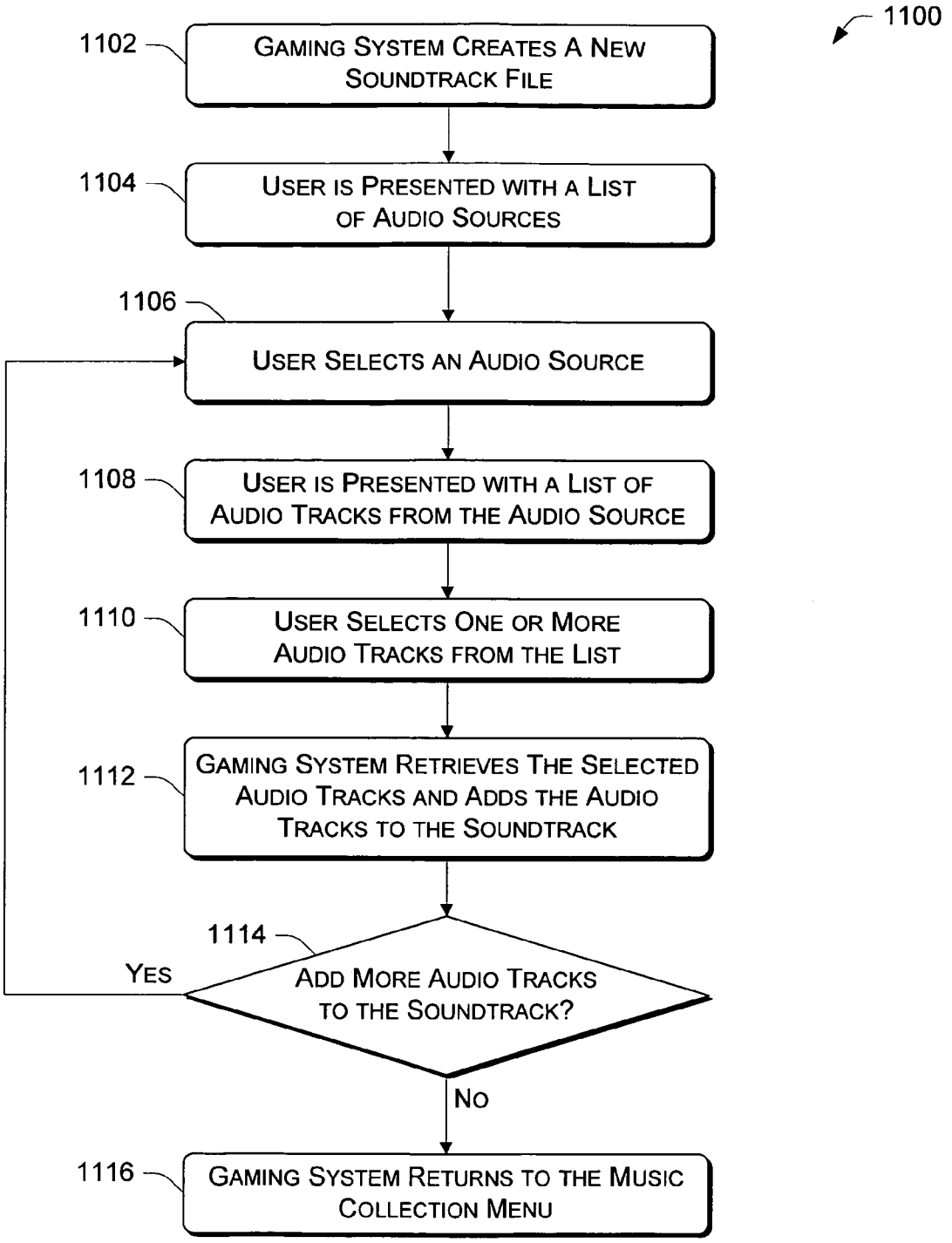
1100
1102
GAMING SYSTEM CREATES A NEW SOUNDTRACK FILE
1104
USER IS PRESENTED WITH A LIST OF AUDIO SOURCES
1106
USER SELECTS AN AUDIO SOURCE
1108
USER IS PRESENTED WITH A LIST OF AUDIO TRACKS FROM THE AUDIO SOURCE
1110
USER SELECTS ONE OR MORE AUDIO TRACKS FROM THE LIST
1112
GAMING SYSTEM RETRIEVES THE SELECTED AUDIO TRACKS AND ADDS THE AUDIO TRACKS TO THE SOUNDTRACK
1114
ADD MORE AUDIO TRACKS TO THE SOUNDTRACK?
YES
NO
1116
GAMING SYSTEM RETURNS TO THE MUSIC COLLECTION MENU

Fig. 11

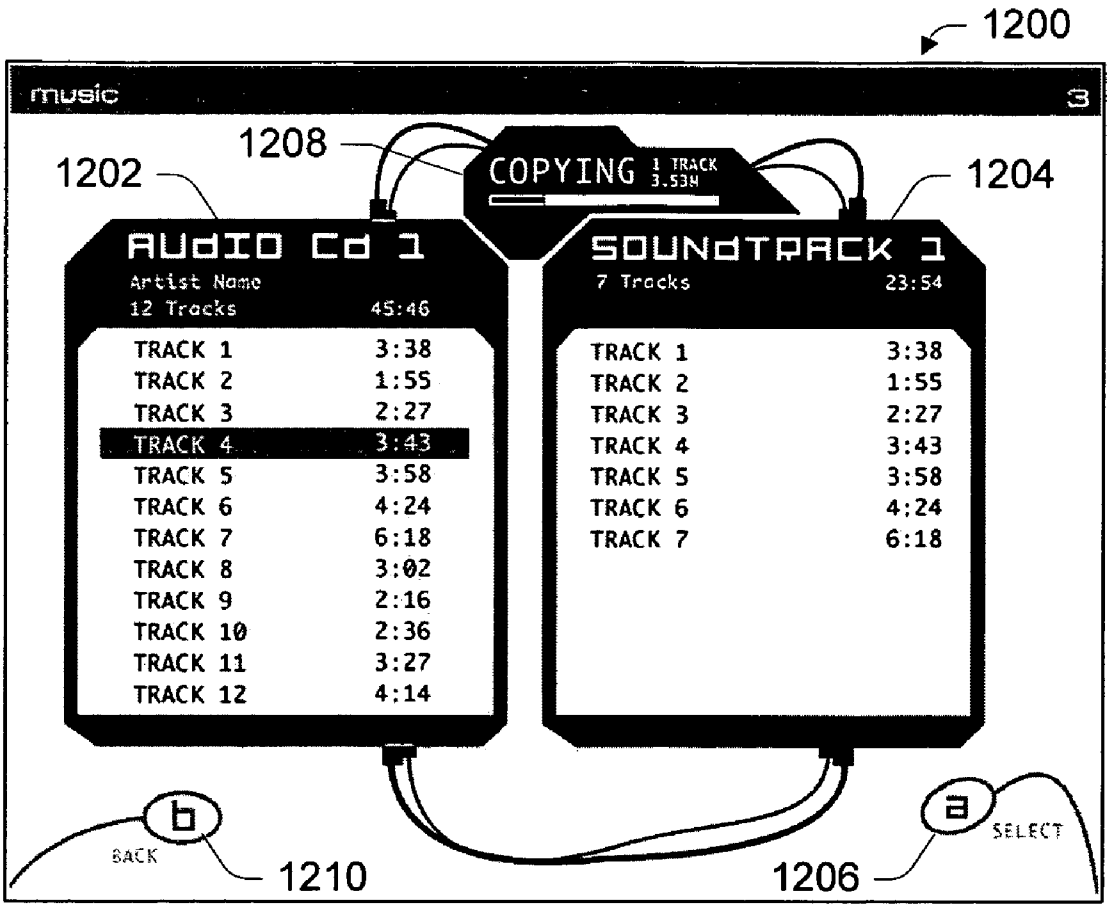
1200
music
3
1208
1202
COPYING 1 TRACK 3.53M
1204
AUDIO CD 1
Artist Name
12 Tracks 45:46
TRACK 1 3:38
TRACK 2 1:55
TRACK 3 2:27
TRACK 4 3:43
TRACK 5 3:58
TRACK 6 4:24
TRACK 7 6:18
TRACK 8 3:02
TRACK 9 2:16
TRACK 10 2:36
TRACK 11 3:27
TRACK 12 4:14
SOUNDTRACK 1
7 Tracks 23:54
TRACK 1 3:38
TRACK 2 1:55
TRACK 3 2:27
TRACK 4 3:43
TRACK 5 3:58
TRACK 6 4:24
TRACK 7 6:18
b
BACK
1210
a
SELECT
1206

Fig. 12

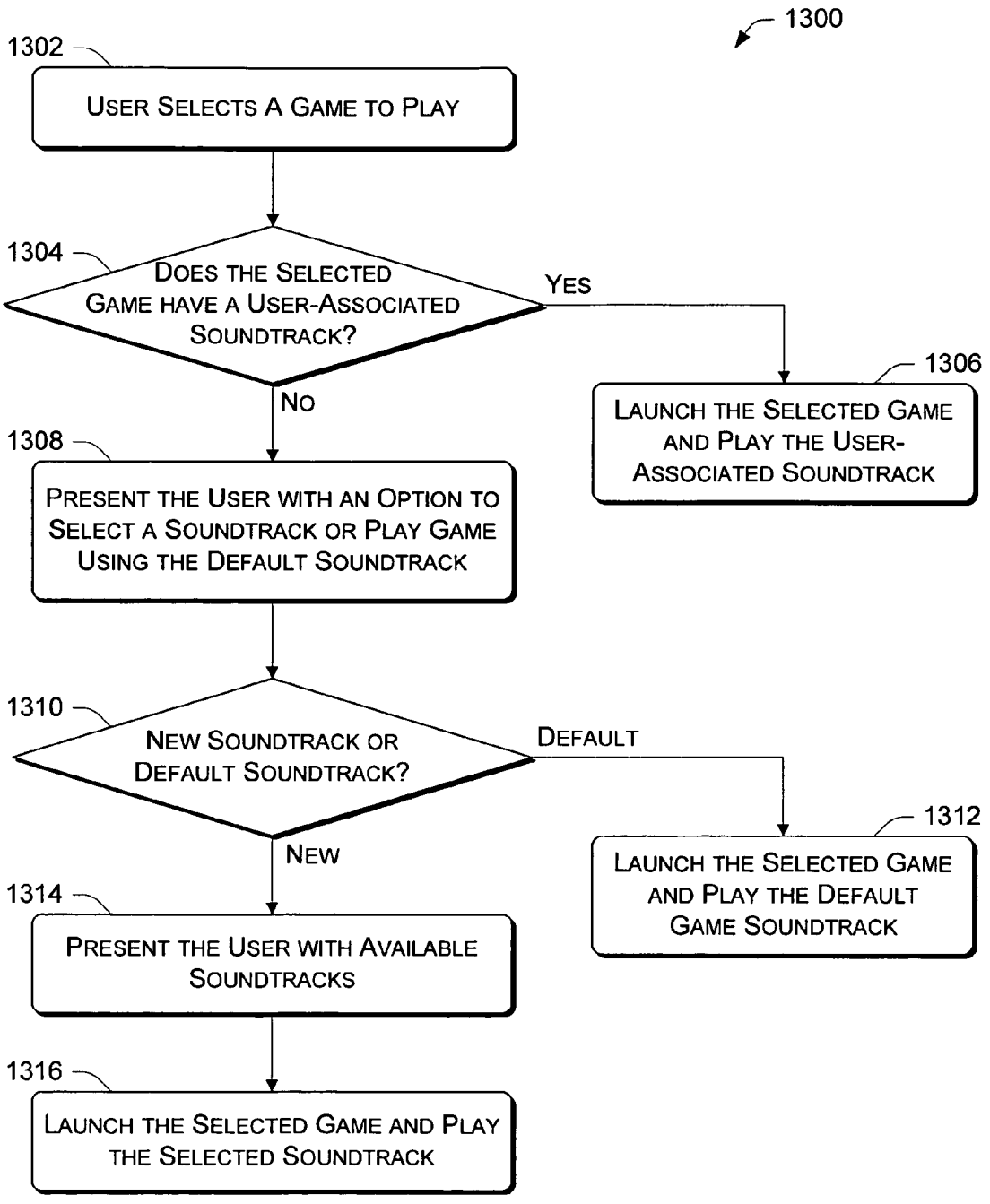
1300
1302
USER SELECTS A GAME TO PLAY
1304
DOES THE SELECTED GAME HAVE A USER-ASSOCIATED SOUNDTRACK?
YES
NO
1306
LAUNCH THE SELECTED GAME AND PLAY THE USER-ASSOCIATED SOUNDTRACK
1308
PRESENT THE USER WITH AN OPTION TO SELECT A SOUNDTRACK OR PLAY GAME USING THE DEFAULT SOUNDTRACK
1310
NEW SOUNDTRACK OR DEFAULT SOUNDTRACK?
DEFAULT
NEW
1312
LAUNCH THE SELECTED GAME AND PLAY THE DEFAULT GAME SOUNDTRACK
1314
PRESENT THE USER WITH AVAILABLE SOUNDTRACKS
1316
LAUNCH THE SELECTED GAME AND PLAY THE SELECTED SOUNDTRACK

Fig. 13

METHOD AND APPARATUS FOR CREATING AND PLAYING SOUNDTRACKS IN A GAMING SYSTEM

RELATED APPLICATIONS

This application is a Continuation of co-pending application Ser. No. 10/778,643, filed Feb. 12, 2004, entitled "Method and Apparatus for Creating and Playing Soundtracks in a Gaming System", and incorporated herein by reference. That application is a divisional of co-pending application Ser. No. 09/802,661, filed Mar. 9, 2001, entitled "Method and Apparatus for Creating and Playing Soundtracks in a Gaming System", which is also incorporated herein by reference.

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TECHNICAL FIELD

This invention relates to gaming systems and, more particularly, to the creation of soundtracks using a gaming system and to the playback of soundtracks using a gaming system.

BACKGROUND

Gaming systems currently available on the market are capable of playing game discs, music CDs, and movie DVDs from a disc drive. For example, the Playstation® 2 gaming system from Sony Corporation provides the ability to play games, music, and video titles from a disc inserted in the console. Certain gaming systems also provide a modem or other mechanism for establishing an online connection to facilitate online gaming.

Current gaming systems play games that typically include a game soundtrack. The game soundtrack is stored on a disc along with the game (i.e., a game disc). This game soundtrack includes music that is created by or selected by the game developer. If the user of the gaming system dislikes the game soundtrack or grows tired of the same soundtrack being played repeatedly, some gaming systems allow the user to launch the game from the game disc, and then replace the game disc with an audio CD that is played by the gaming system while the game is executed. However, if the game requires additional information from the game disc (e.g., when changing from one level to another), the user must remove the audio CD and re-insert the game disc. After the additional information has been retrieved from the game disc, the game disc can be removed from the is gaming system and replaced with the audio CD. This switching of discs disrupts the gaming experience and is a nuisance to the user.

The system and method described herein addresses these limitations by providing a mechanism to create soundtracks in a gaming system and to select a soundtrack to be played while executing a particular game.

SUMMARY

The method and apparatus described herein provide the ability to create, edit, and play soundtracks in a gaming system. The soundtracks include one or more audio tracks copied or retrieved from one or more audio sources (such as an audio CD, an audio DVD, a game disc, or an online source containing audio files). Soundtracks are stored on a hard disk drive in the gaming system and can be played back through the gaming system. Additionally, soundtracks stored in the gaming system can be associated with a particular game such that the soundtrack is played (instead of the game's default soundtrack) while the game executes. This system allows the user to choose or create a soundtrack based on the user's audio preferences, and does not limit the user to the game soundtrack provided by the game developer.

In the described implementation, the gaming system includes a game console and one or more controllers. The game console is equipped with a hard disk drive, a portable media drive, and broadband connectivity. A console application stored on the hard disk drive is loaded when the game console is powered on. The console application presents a menu hierarchy that includes various soundtrack creation and soundtrack selection menus. The soundtrack creation menu allows the user to select various audio tracks to be included in a soundtrack. The soundtrack selection menu allows the user to select a soundtrack for playback or for associating with a particular game such that the soundtrack is played when the particular game is launched.

When a game is launched, the gaming system determines whether the launched game has a user-associated soundtrack. If so, the user-associated soundtrack is retrieved from the hard disk drive and played while the game is executed. If the launched game does not have a user-associated soundtrack, the gaming system either 1) plays the default game soundtrack provided by the game developer; or 2) allows the user to select the soundtrack to be played while the game is executed. The user of the gaming system can change soundtracks in the middle of a game by pausing the game and selecting a different soundtrack. The gaming system then resumes execution of the game and begins playing the newly selected soundtrack.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a gaming system that implements a uniform media portal architecture.

FIG. **2** is a block diagram of the gaming system.

FIG. **3** illustrates a network gaming system in which the FIG. **1** gaming system is connected via a network to other consoles and services.

FIG. **4** illustrates a navigation hierarchy employed by the gaming system.

FIG. **5** illustrates a graphical user interface depicting the main menu of the gaming system.

FIG. **6** is a flow diagram of the main menu navigation process that is performed after the gaming system is initialized.

FIG. **7** illustrates a graphical user interface depicting a music collection menu that is accessible from the main menu.

FIG. **8** illustrates a graphical user interface depicting a music player that is accessible from the music collection menu.

FIG. **9** illustrates a graphical user interface depicting a screen display used to select an existing soundtrack or create a new soundtrack.

FIG. **10** illustrates the creation of a soundtrack using a variety of different audio sources.

FIG. **11** is a flow diagram illustrating a process for creating a new soundtrack.

FIG. **12** illustrates a graphical user interface depicting a screen displayed during the creation of a soundtrack.

FIG. **13** is a flow diagram illustrating a process that determines which soundtrack to play when a particular game is launched.

DETAILED DESCRIPTION

The method and apparatus discussed herein allows users to create and play soundtracks in a gaming system. A soundtrack can be played by itself or played at the same time a game is executed, thereby replacing the soundtrack provided with the game. The soundtrack is created by copying audio data (or audio tracks) from one or more audio sources and storing the audio data as a soundtrack on a hard disk drive. The audio sources may include audio CDs, audio DVDs, game discs, and online sources that contain music files available for download. Since the soundtrack is played from the hard disk drive, it is not necessary to remove the game disc or other media from the gaming system prior to playing the soundtrack.

FIG. **1** shows an exemplary gaming system **100**. It includes a game console **102** and up to four controllers, as represented by controllers **104**(**1**) and **104**(**2**). The game console **102** is equipped with an internal hard disk drive and a portable media drive **106** that supports various forms of portable storage media as represented by optical storage disc **108**. Examples of suitable portable storage media include DVD, CD-ROM, game discs, and so forth.

The game console **102** has four slots **110** on its front face to support up to four controllers **104**, although the number and arrangement of slots may be modified. A power button **112** and an eject button **114** are also positioned on the front face of the game console **102**. The power button **112** switches power to the game console and the eject button **114** alternately opens and closes a tray of the portable media drive **106** to allow insertion and extraction of the storage disc **108**.

The game console **102** connects to a television or other display (not shown) via AN interfacing cables **120**. A power cable **122** provides power to the game console. The game console **102** may further be configured with broadband capabilities, as represented by the cable or modem connector **124** to facilitate access to a network, such as the Internet.

Each controller **104** is coupled to the game console **102** via a wire or wireless interface. In the illustrated implementation, the controllers are USB (Universal Serial Bus) compatible and are connected to the console **102** via serial cables **130**. The controller **102** may be equipped with any of a wide variety of user interaction mechanisms. As illustrated in FIG. **1**, each controller **104** is equipped with two thumbsticks **132**(**1**) and **132**(**2**), a D-pad **134**, buttons **136**, and two triggers **138**. These mechanisms are merely representative, and other known gaming mechanisms may be substituted for or added to those shown in FIG. **1**.

A memory unit (MU) **140** may be inserted into the controller **104** to provide additional and portable storage. Portable memory units enable users to store game parameters and port them for play on other consoles. In the described implementation, each controller **104** is configured to accommodate two memory units **140**, although more or less than two units may be employed in other implementations.

The gaming system **100** is capable of playing, for example, games, music, and videos. With the different storage offerings, titles can be played from the hard disk drive or the portable medium **108** in drive **106**, from an online source, or from a memory unit **140**. A sample of what the gaming system **100** is capable of playing back include:

1. Game titles played from CD and DVD, from the hard disk drive, or from an online source.
2. Digital music played from a CD in the portable media drive **106**, from a file on the hard disk drive (e.g., Windows Media Audio (WMA) format), or from online streaming sources.
3. Digital audio/video played from a DVD disc in the portable media drive **106**, from a file on the hard disk drive (e.g., Active Streaming Format), or from online streaming sources.

FIG. **2** shows functional components of the gaming system **100** in more detail. The game console **102** has a central processing unit (CPU) **200** and a memory controller **202** that facilitates processor access to various types of memory, including a flash ROM (Read Only Memory) **204**, a RAM (Random Access Memory) **206**, a hard disk drive **208**, and the portable media drive **106**. The CPU **200** is equipped with a level 1 cache **210** and a level 2 cache **212** to temporarily store data and hence reduce the number of memory access cycles, thereby improving processing speed and throughput.

The CPU **200**, memory controller **202**, and various memory devices are interconnected via one or more buses, including serial and parallel buses, a memory bus, a peripheral bus, and a processor or local bus using any of a variety of bus architectures. By way of example, such architectures can include an Industry Standard Architecture (ISA) bus, a Micro Channel Architecture (MCA) bus, an Enhanced ISA (EISA) bus, a Video Electronics Standards Association (VESA) local bus, and a Peripheral Component Interconnects (PCI) bus, also known as a Mezzanine bus.

As one suitable implementation, the CPU **200**, memory controller **202**, ROM **204**, and RAM **206** are integrated onto a common module **214**. In this implementation, ROM **204** is configured as a flash ROM that is connected to the memory controller **202** via a PCI (Peripheral Component Interconnect) bus and a ROM bus (neither of which are shown). RAM **206** is configured as multiple DDR SDRAM (Double Data Rate Synchronous Dynamic RAM) that are independently controlled by the memory controller **202** via separate buses (not shown). The hard disk drive **208** and portable media drive **106** are connected to the memory controller via the PCI bus and an ATA (AT Attachment) bus **216**.

A 3D graphics processing unit **220** and a video encoder **222** form a video processing pipeline for high speed and high resolution graphics processing. Data is carried from the graphics processing unit **220** to the video encoder **222** via a digital video bus (not shown). An audio processing unit **224** and an audio codec (coder/decoder) **226** form a corresponding audio processing pipeline with high fidelity and stereo processing. Audio data is carried between the audio processing unit **224** and the audio codec **226** via a communication link (not shown). The video and audio processing pipelines output data to an ANV (audio/video) port **228** for transmission to the television or other display. In the illustrated implementation, the video and audio processing components **220**-**228** are mounted on the module **214**.

Also implemented on the module **214** are a USB host controller **230** and a network interface **232**. The USB host controller **230** is coupled to the CPU **200** and the memory controller **202** via a bus (e.g., PCI bus) and serves as host for the peripheral controllers **104**(**1**)-**104**(**4**). The network interface **232** provides access to a network (e.g., Internet, home network, etc.) and may be any of a wide variety of various wired or wireless interface components including an Ethernet card, a modem, a Bluetooth module, a cable modem, and the like.

The game console **102** has two dual controller support subassemblies **240(1)** and **240(2)**, with each subassembly supporting two game controllers **104(1)-104(4)**. A front panel I/O subassembly **242** supports the functionality of the power button **112** and the eject button **114**, as well as any LEDs (light emitting diodes) or other indicators exposed on the outer surface of the game console. The subassemblies **240(1)**, **240(2)**, and **242** are coupled to the module **214** via one or more cable assemblies **244**.

Eight memory units **140(1)-140(8)** are illustrated as being connectable to the four controllers **104(1)-104(4)**, i.e., two memory units for each controller. Each memory unit **140** offers additional storage on which games, game parameters, and other data may be stored. When inserted into a controller, the memory unit **140** can be accessed by the memory controller **202**.

A system power supply module **250** provides power to the components of the gaming system **100**. A fan **252** cools the circuitry within the game console **102**.

The game console **102** implements a uniform media portal model that provides a consistent user interface and navigation hierarchy to move users through various entertainment areas. The portal model offers a convenient way to access content from multiple different media types—game data, audio data, and video data—regardless of the media type inserted into the portable media drive **106**.

To implement the uniform media portal model, a console user interface (UI) application **260** is stored on the hard disk drive **208**. When the game console is powered on, various portions of the console application **260** are loaded into RAM **206** and/or caches **210**, **212** and executed on the CPU **200**. The console application **260** presents a graphical user interface that provides a consistent user experience when navigating to different media types available on the game console.

The gaming system **100** may be operated as a standalone system by simply connecting the system to a television or other display. In this standalone mode, the gaming system **100** allows one or more players to play games, watch movies, or listen to music. However, with the integration of broadband connectivity made available through the network interface **232**, the gaming system **100** may further be operated as a participant in a larger network gaming community.

FIG. **3** shows an exemplary network gaming environment **300** that interconnects multiple gaming systems **100(1)**, . . . , **100**(g) via a network **302**. The network **302** represents any of a wide variety of data communications networks. It may include public portions (e.g., the Internet) as well as private portions (e.g., a residential Local Area Network (LAN)), as well as combinations of public and private portions. Network **302** may be implemented using any one or more of a wide variety of conventional communications media including both wired and wireless media. Any of a wide variety of communications protocols can be used to communicate data via network **302**, including both public and proprietary protocols. Examples of such protocols include TCP/IP, IPX/SPX, NetBEUI, etc.

In addition to gaming systems **100**, one or more online services **304(1)**, . . . , **304**(s) may be accessible via the network **302** to provide various services for the participants, such as hosting online games, serving downloadable music or video files, hosting gaming competitions, serving streaming audio/video files, and the like. The network gaming environment **300** may further involve a key distribution center **306** that plays a role in authenticating individual players and/or gaming systems **100** to one another as well as online services **304**. The distribution center **306** distributes keys and service tickets to valid participants that may then be used to form games amongst multiple players or to purchase services from the online services **304**.

The network gaming environment **300** introduces another memory source available to individual gaming systems **100**—online storage. In addition to the portable storage medium **108**, the hard disk drive **208**, and the memory unit(s) **140**, the gaming system **100(1)** can also access data files available at remote storage locations via the network **302**, as exemplified by remote storage **308** at online service **304**(*s*).

FIG. **4** shows the uniform media portal model **400**. It provides a main menu **402** that acts as a common interface for multiple media types, including game media, movie media, and music media. The main menu **402** presents the user with a set of navigation choices that accurately describe what they would like to interact with on their console. This top-level menu is a simple representation of the three primary entertainment areas available on the console, thus presenting the following choices:

Games: This entertainment area pertains to a user's game experience and gaming media.

Music: This entertainment area is dedicated to the music context and audio media.

Movies: This entertainment area relates to a user's movie experience and video media.

The model's navigation hierarchy follows the media theme. Beneath the main menu **402** are collections of titles that pertain to their particular media types currently available to the user. In this example, a user can navigate from the main menu **402** to a games collection **404** that lists currently available game titles. Navigation may also be made to a music collection **406** that groups available music titles and a movie collection **408** that groups available movie titles. By constructing the hierarchy in terms of media type, the user is intuitively presented with titles within any given entertainment area. The titles within the various areas may be stored in any one of many storage locations, but such detail is not immediately revealed. Thus, the uniform media portal model **400** offers a coherent way to access multiple media types regardless of the media type inserted into the gaming system's portable media drive.

Area specific features, such as high scores on a game or creating a soundtrack, are left for lower levels of the model **400**. Thus, beneath each collection is the specific play area that pertains to the particular media experience. A games play area **410** is navigated through the games collection **404**, a music play area **412** is accessed through the music collection **406**, and a movies play area **414** is navigated through the movie collection **408**. This organization of the model allows users to select the context of the media type. This model thus provides a high-level "filter" on the kinds of media available on the console, and what operations may be performed with respect to the media.

The model **400** also accommodates system areas, including a memory area **416** and a settings area **418**. The memory area **416** allows users to view memory contents and manage the memory devices in the console. The settings area **418** allows users to preview currently set options, as well as adjust the settings as desired.

The console application **260**, which implements the uniform media portal model **400**, is stored in the hard disk drive **208** of the console **102**. The console application **260** is loaded each time the console is powered on. When power is initially applied and before presenting the main menu or loading a title, the console application **260** runs through an initialization cycle.

FIG. **5** illustrates an exemplary graphical user interface **500** depicting the main menu of the gaming system. The main menu UI **500** is generated by the console UI application **260** and depicted on the television or other display. The main menu UI **500** contains the five menu elements: a games element **502**, a music element **504**, a movies element **506**, a

memory element **508**, and a setting element **510**. These elements provide the navigation entry points for the five level-one areas of the uniform media portal model **400**, namely, the games collection **404**, the music collection **406**, the movie collection **408**, the memory **416**, and the settings **418**. Environmental background audio may be played when entering the main menu to further enhance the user environment.

The focus on the main menu UI **500** is initially placed on the games element **502**, but other default positions may be alternatively employed. Any of the four controllers **104**(**1**)-**104**(**4**) may be used to navigate the console user interface. The main menu is navigated from left to right with any of the connected controller thumbsticks. "D-pad" and left analog thumbstick actions are treated the same. The console UI application **260** recognizes all button presses and thumbstick movements from every controller **104**, so moves from multiple thumbsticks simultaneously may result in a "tug-of-war" navigation. In one implementation, the navigation does not wrap once the user has reached the far left or right extent of the main menu UI **500**, thus attempting to move right once the user has reached the settings element **510** or to move left once the user has reached the games element **502** will have no effect.

A select element **512** allows the user to select the focused element from among the five main menu elements **502**-**510**. The "A" button on the controller is used to control the select element **512**, and hence the graphical select element **512** illustrates an "a" within the element. Upon selection, the console UI application navigates to the selected area.

FIG. **6** is a flow diagram of the main menu navigation process **600** that is performed after the gaming system is initialized. The process **600** is implemented in software as computer-executable instructions that are executed by the CPU **200** to perform the operations illustrated as blocks. The process generally discerns which main menu element is selected and navigates to the selected area.

At block **602**, the console application **260** determines whether the games element **502** is selected. If so (i.e., the "Yes" branch from block **602**), the console application **260** navigates to the games collection **404** and presents a games collection menu (block **604**). If the games element is not selected, block **606** determines whether the music element **504** is selected. If the music element **504** is selected, the console UI application **260** navigates to the music collection **406** and presents a music collection menu (block **608**). As discussed below, the music collection menu includes options to create, edit, and play soundtracks through the gaming system.

If the movies element **506** is selected (block **610**), the console UI application **260** navigates to the movies collection **408** and presents a movie player (block **612**). If the memory element **508** is selected (block **614**), the console UI application **260** navigates to the memory area **416** and presents a memory collection menu (block **616**). Finally, if the settings element **510** is selected (block **618**), the console UI application **260** navigates to the settings area **418** and presents a settings collection menu (block **620**).

FIG. **7** illustrates a graphical user interface depicting a music collection menu **700** that is presented upon selection of the music element **504** in the main menu UI **500** (FIG. **5**). The music collection is the area where the user can select from available audio discs in the portable media drive **106** as well as soundtracks they have previously created and stored on the hard disk drive **208**. The music collection menu **700** includes a list **702** of the available audio discs in the portable media drive (if any) and soundtrack files on the hard disk drive. An example of a suitable audio disc is a Redbook audio CD (compact disc). An example of a suitable soundtrack file is one or more WMA files copied from an audio CD, an audio DVD, a game disc, an online source, or other audio source.

An orb **704** contains a graphic of the currently selected audio item and a metatext panel **706** posts information about the current audio element. As the user navigates over the list **702** of the available audio discs and soundtracks, corresponding summary information is posted in the metadata panel **706**. The following information is displayed for the currently selected audio disc or soundtrack:

Name of the audio element as it appears in the list

Total number of tracks

Total playing time for the audio element in minutes and seconds

In this example, the audio CD is highlighted in list **702** and hence a CD image is presented in orb **704**. As indicated by the metatext panel **706**, the audio CD is the 14-track album "Earthling" by David Bowie. When network access is available, artist and other information (such as track titles and release date) can be retrieved from online services over the Internet at any time.

Descriptive text **708** (i.e., "n items") is positioned beside the main legend "Music Collection" to indicate the number of titles in the music collection. The list **702** displays a limited number of music titles (e.g., eight titles). When a user first enters the music collection after purchasing their console, there will be zero titles in the music collection (i.e., "0 items"). In this situation, the music collection menu **700** is bypassed and the user is navigated to the music player screen (shown and described below with respect to FIG. **8**). The title of the music player screen is "no audio CD" and all of the playback buttons in the area are disabled. The user may only navigate back to the main menu **500** (FIG. **5**).

If the user only has a single audio disc in the portable media drive, or a single soundtrack in the music collection, the user is automatically navigated past the music collection menu **700** when coming from the main menu and is taken directly to the music player screen. As the user creates multiple soundtracks and stores them in the hard disk drive, the music collection menu **700** is no longer bypassed, but instead presents the available soundtracks in the list **702**. When the descriptive text **708** indicates that there are more music titles than shown on list **702** (e.g., n>8), up/down scroll arrows are added to the list **702** to represent that more titles are available.

The user can move among music titles in list **702** by using the up and down directions of the thumbstick, or some other pre-defined control mechanism. The list **702** may be configured to wrap or not wrap when the user reaches the top or the bottom of the list. A select element **710** enables user selection of the highlighted title from list **702** using the "A" button on the controller. Selection of a game title navigates the user to the music player menu. A back element **712** facilitates navigation back to the main menu UI **500** by pressing the "B" button on the controller.

FIG. **8** illustrates a graphical user interface depicting an exemplary music player **800** that is accessible from the music collection menu or, where no music titles are listed, upon loading a music disc. The music player allows the user to play back the current audio disc in the portable media drive **106** or previously created soundtracks. The music player **800** includes a track list **802** of the available audio tracks and corresponding track lengths, an orb **804** that contains a radial spectrum analyzer (or other music related visual), and a status element **806** that displays the current playback status and timeline of the current track. During audio playback, the current track being played within the track list **802** is highlighted. The status element **806** renders the following information for the user:

Current time within the current track
Visual progress bar for the current track
Simple playback icons to denote playback status (e.g., play, pause, stop, repeat, random)

A transport control panel **812** is displayed along the bottom of the music player for playback control. An example control panel **812** includes a play/pause button, a stop button, a skip forward button, a skip back button, a random track selection button, and a repeat button. When the user first navigates into the music player from the main menu or the music collection, the play button in the transport control panel **812** is in focus by default. Buttons on the game controller **104** may be mapped to the transport control buttons. For example, a white button on the controller might be mapped to the play/pause toggle button, the black controller button might be mapped to the stop button, the left trigger might be mapped to the previous track button, and the Right trigger might be mapped to the next track button.

A "copy song" button **816** is also displayed in the music player UI **800**. When the copy song button **816** is selected, the user is navigated into the soundtrack creation tool with the current audio disc or soundtrack as the source. The soundtrack creation tool allows one or more tracks to be copied to a soundtrack. The soundtrack creation tool is discussed in greater detail below.

A select element **808** enables user selection of the highlighted audio track from list **802** using the "A" button on the controller. A back element **810** facilitates navigation back to the previous menu by pressing the "B" button on the controller.

FIG. **9** illustrates a graphical user interface depicting a example screen display **900** used to select an existing soundtrack or create a new soundtrack. As noted above, users can create their own soundtracks by copying audio tracks from one or more audio sources. Screen display **900** provides users with a list **902** of all soundtracks available to the gaming system. Such soundtracks may be stored on the hard disk drive **208**, a portable disc medium **108** in drive **106**, a memory unit **140**, or at remote storage **308** at an online source **304**. If the user has created at least one soundtrack, the list **902** depicts one or more placards of available soundtracks. A user entered name, or a default name "soundtrack **1**", "soundtrack **2**", etc., is shown on the placards.

A "New Soundtrack" button **904** is positioned beside the list to enable the user to create a new soundtrack. Upon selection of a soundtrack in the list **902** or the "New Soundtrack" button **904**, the user is navigated to a track selection screen described below with respect to FIG. **12**. If the user has not yet created a soundtrack, the list **902** of available soundtracks is empty. Upon choosing the "New Soundtrack" button **904**, the user is presented with an area for text entry and a virtual keyboard for typing a new name for the soundtrack. By default, the name given to the soundtrack will be "Soundtrack **1**", but any keyboard input from the user will replace this default title with the entered name.

FIG. **10** illustrates the creation of a soundtrack using a variety of different audio sources. A new soundtrack **1002** is created by selecting audio tracks from one or more different audio sources. Exemplary audio sources illustrated in FIG. include audio CDs **1004** and **1006**, game discs **1008** and **1010**, WMA files **1012** and **1014**, and audio DVDs **1016** and **1018**. Although a limited number of audio sources are illustrated in FIG. **10**, soundtrack **1002** can be created using audio tracks from any number of audio sources that represent any number of artists. The audio tracks that comprise soundtrack **1002** can be arranged in any order, regardless of the audio source or the time at which the audio track was retrieved or copied.

Audio CDs **1004** and **1006** typically include multiple audio tracks. Soundtrack **1002** may contain one or more audio tracks from one or more audio CDs. Game discs **1008** and **1010** may contain one or more audio tracks that are played during the game. One or more of those audio tracks may be included in the user-created soundtrack **1002**. WMA files **1012** and **1014** may be stored locally on the hard disk drive or available from an online source. Each WMA file may contain one or more audio tracks. One or more audio tracks from one or more WMA files may be included in soundtrack **1002**. Additionally, one or more MPEG Layer 3 (MP3) audio files (not shown) may be included in soundtrack **1002**. MP3 files may be stored locally on the hard disk drive or available from an online source. Audio DVDs **1016** and **1018** typically include multiple audio tracks. Soundtrack **1002** may include one or more audio tracks from one or more audio DVDs.

FIG. **11** is a flow diagram illustrating a process **1100** for creating a new soundtrack. The process **1100** is implemented in software as computer-executable instructions that are executed by the CPU **200** to perform the operations illustrated as blocks. Initially, the gaming system **100** creates a new soundtrack file to receive the selected audio tracks (block **1102**). The user is given the opportunity to name the soundtrack. If the user does not provide a name, a default name "Soundtrack n" is applied to the soundtrack. The default name can later be changed by the user.

At block **1104**, the console application **260** presents a list of audio sources from which to retrieve or copy audio tracks. Next, the user selects an audio source from the list of audio sources (block **1106**). The console application **260** then presents a list of audio tracks available from the selected audio source (block **1108**). The user then selects one or more audio tracks from the list to include in the soundtrack (block **1110**). At block **1112**, the console application **260** retrieves the selected audio tracks and adds the audio tracks to the soundtrack. If necessary, the console application **260** converts the retrieved audio files into WMA format. For example, audio tracks from an audio CD or an audio DVD are converted from their native format into WMA format prior to adding the audio tracks to the soundtrack. Similarly, MP3 files are converted from MP3 format to WMA format before adding the audio tracks to the soundtrack.

At block **1114**, the console application **260** determines whether more audio tracks are to be added to the soundtrack. This determination is performed, for example, by querying the user as to whether they want to add more tracks. If additional tracks are to be added to the soundtrack, the process **1100** returns to block **1104**, where the user is presented with a list of audio sources. Alternatively, the process **1100** may return to block **1106**, which allows the user to select another audio track from the same audio source as the previous selection.

After all audio tracks have been added to the soundtrack, the process **1100** returns to the music collection menu (block **1116**) shown in FIG. **7**. At this point, the music collection menu displays the newly created soundtrack in the list of available soundtracks.

Each user of a game console **102** can have their soundtracks stored separately from the soundtracks created by other console users. For example, when a user completes the creation of a new soundtrack, the soundtrack is stored in an area on the hard disk drive associated with that user or a user attribute is stored with the soundtrack indicating the creator of the soundtrack. Thus, when a particular user identifies themselves to the game console, the game console displays the soundtracks created by that particular user.

FIG. **12** illustrates a graphical user interface depicting an exemplary audio track selection screen **1200** displayed during the creation of a soundtrack. Audio track selection screen

1200 includes a list 1202 of available audio tracks (e.g., from an audio disc or an online source), and a corresponding list 1204 of audio tracks that are already in the soundtrack. The user then selects a single audio track, or multiple tracks, to be included in the soundtrack. The screen 1200 also depicts a status area 1208 that identifies the progress of the total operation. The ordering of the audio tracks in list 1204 can be adjusted by dragging a particular audio track to the desired location in the list and releasing the audio track. The list 1204 is then reordered to reflect the new location of the audio track.

A particular implementation of the audio track selection screen may include a "name soundtrack" button that allows the user to assign a name to the soundtrack. The name can be entered using a virtual keyboard or other character input mechanism. The audio track selection screen may also include a delete button that allows the user to delete a particular song from the soundtrack.

After the soundtrack is completed, a select element 1206 is activated by the using the "A" button on the controller. This select element causes the system to navigate back to the music collection menu. A back element 1210 facilitates navigation back to the previous menu by pressing the "B" button on the controller.

If the user cancels a file copy operation, those audio files being copied or retrieved will be lost. If a power off occurs while creating a soundtrack, any audio files being copied or retrieved will not be included in the soundtrack.

In a particular implementation, soundtracks are stored as one or more WMA files on the gaming system 100. Specifically, WMA files for soundtracks are stored in a flat directory on the hard disk drive 208. This directory also contains a text data file that maintains a reference of all WMA files, as well as the soundtracks to which each WMA file belongs. Because the game console manages the soundtrack directory, it is possible to keep this data file up to date. An API (application program interface) may be used to allow a game to query such information as the list of available soundtracks, the first audio file of a specific soundtrack, the last audio file of a specific soundtrack, and the next audio file in a specific soundtrack.

FIG. 13 is a flow diagram illustrating a process 1300 that determines which soundtrack to play when a particular game is launched. The process 1300 is implemented in software as computer-executable instructions that are executed by the CPU 200 to perform the operations illustrated as blocks. When a user plays a game, the user can choose to listen to the game's default soundtrack or listen to a different soundtrack. If the user becomes tired of the game's default soundtrack, the user can create a new soundtrack and associate that soundtrack with the game title such that the new soundtrack is played when the game is launched instead of the game's default soundtrack. This new soundtrack is referred to as a "user-associated soundtrack."

The process 1300 begins when a user selects a game to play (block 1302). The game may be selected, for example, by inserting a game disc in the portable media drive 106, by selecting a game from list of games stored on the hard disk drive 108, or by selecting a game from an online source. The console application 260 determines whether the selected game has a user-associated soundtrack (block 1304). If the selected game has a user-associated soundtrack, the game is launched and the user-associated soundtrack is played during the execution of the game (block 1306).

If the selected game does not have a user-associated soundtrack, the console application 260 presents the user with an option to select a soundtrack or play the game using the default soundtrack (block 1308). Next, the console application 260 determines whether the user selected a soundtrack or the default soundtrack (block 1310). If the user selects the default game soundtrack, the game is launched and the default game soundtrack is played during the execution of the game (block 1312). If the user selects to choose a soundtrack, the user is presented with the available soundtracks stored on the gaming system (block 1314). The game is then launched and the selected soundtrack is played during the execution of the game (block 1316).

When the user selects a soundtrack to play instead of the default soundtrack, the user is presented with the option of making the soundtrack change "permanent." If the change is made permanent, the selected soundtrack will be played instead of the default soundtrack each time the game is played. Thus, the user is not required to select the new soundtrack each time the game is played—the system will remember the new soundtrack until the user specifically changes the soundtrack or specifically requests the gaming console to begin using the default game soundtrack.

Since the soundtrack is played from the hard disk drive, the playback of the soundtrack does not interfere with the execution of the game from the game disc. The game disc remains in the game console while the soundtrack executes, thereby eliminating the game disruptions that would occur if the game disc was removed and replaced with an audio CD. The user can change soundtracks in the middle of a game by pausing the game and selecting a different soundtrack. The game is then "un-paused" and game play continues at the point where the game was previously paused. The new soundtrack is played back from the hard disk drive while the game executes from the game disc.

Although the invention has been described in language specific to structural features and/or methodological acts, it is to be understood that the invention defined in the appended claims is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as exemplary forms of implementing the claimed invention.

The invention claimed is:

1. A method comprising:

executing a game application and playing a first soundtrack on a gaming system, wherein the first soundtrack is associated with the gaming application;

receiving a request to select a different soundtrack;

displaying a selectable list of soundtracks which are accessible by the gaming system, the selectable list including one or more soundtracks created by a user apart from the game application using a console application to choose from among a plurality of sources for audio files to create the soundtracks by copying selected audio files to a mass storage component of the gaming system, such that audio files of each soundtrack are accessible from the mass storage component to:

playback directly using a media player component of the console application; and

playback during execution of associated game applications;

determining a new soundtrack selected by a user via the list to be played, wherein the new soundtrack is not associated with the game application and has not previously been associated with the game application by a user;

assigning the new soundtrack to the gaming application, wherein the new soundtrack is played by default instead of a default soundtrack provided with the game application; and

continuing execution of the game application and playing the new soundtrack on the gaming system, wherein the new soundtrack is stored on and played from the mass storage component.

2. A method as recited in claim **1** wherein the selectable list of soundtracks is generated by identifying soundtracks stored in the gaming system.

3. A method as recited in claim **1** wherein determining a new soundtrack to be played includes receiving information regarding a selected soundtrack.

4. A method as recited in claim **1** wherein the first soundtrack is a user-associated soundtrack.

5. A method as recited in claim **1** wherein the first soundtrack is the default soundtrack.

6. A computer-readable medium for a game console comprising computer-executable instructions that, when executed, direct the game console to:

execute a game application and play a first soundtrack associated with the game application;

receive a request to select a different soundtrack;

responsive to the request, display a selectable list of soundtracks which are accessible by the gaming system, the selectable list including a plurality of soundtracks created by a user apart from the game application using a console application to choose from among a plurality of sources for audio files to create the soundtracks by copying selected audio files to a mass storage component of the gaming system, such that audio files of each soundtrack are accessible from the mass storage component to:

playback directly using a media player component of the console application; and

playback during execution of associated game applications;

determine a new soundtrack selected by a user via the list to play, wherein the new soundtrack is not provided with the game application and has not previously been associated with the game application by a user; and

resume execution of the game application and play the new soundtrack,

wherein the new soundtrack is assigned to be played by default instead of a default soundtrack provided with the game application.

7. A computer-readable medium as recited in claim **6** wherein the selectable list of soundtracks is stored on the computer-readable medium.

8. A computer-readable medium as recited in claim **6** wherein the computer-executable instructions, when executed, further retrieve information regarding the new soundtrack.

9. A computer-readable medium as recited in claim **6** wherein the first soundtrack is associated with a user of the game console.

10. A computer-readable medium as recited in claim **6** wherein the first soundtrack is the default soundtrack.

11. A computer-readable medium as recited in claim **6** wherein the new soundtrack is stored on a hard disk contained in the game console.

12. A computer-readable medium as recited in claim **6** wherein the new soundtrack is stored on a portable memory unit coupled to the game console.

13. A computer-readable medium as recited in claim **1** wherein the new soundtrack is stored on a hard disk contained in the gaming system.

14. A computer-readable medium as recited in claim **1** wherein the new soundtrack is stored on a portable memory unit coupled to the gaming system.

15. A computer-readable medium as recited in claim **1** wherein the new soundtrack is available from an online source coupled to the gaming system.

16. A method comprising:

executing a game application on a gaming system and playing a default soundtrack provided with the game application;

receiving a request to select a new soundtrack;

displaying a selectable list of soundtracks including at least one soundtrack available from a hard disk that is a built-in part of the gaming system, the at least one soundtrack from the hard disk created using a console application to choose from among a plurality of sources for audio files to create the soundtracks by copying selected audio files the hard disk of the gaming system, such that audio files of the soundtrack are accessible from the hard disk to:

playback directly using a media player component of the console application; and

playback during execution of associated game applications;

displaying in the selectable list at least an additional soundtrack available from an additional source, the at least additional soundtrack from the additional source not associated with the gaming application;

determining, based upon a user selection via the selectable list, a new soundtrack to be played as either the at least one soundtrack or the at least additional soundtrack; and

assigning the new soundtrack to the gaming application, wherein the new soundtrack is played by default instead of the default soundtrack provided with the game application.

17. A method as recited in claim **16** wherein the additional source is an online source accessible by the gaming system.

18. A method as recited in claim **16** further comprising continuing execution of the game application and playing the new soundtrack.

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